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Title : Experimental approach to minimise biases due to differential digestion in dolphins stomach content analysis

Category : Ecology

Student : Doctoral

Preferred Format : Either Oral or Poster Presentation

Abstract : The two major objectives of stomach content analyses are to gain knowledge about species feeding ecology and to model trophic relationships for management purposes. This is achieved through the determination of diet compositions both comparable with other studies and as close as possible to the actual diet. Many studies showed that some remains of digested prey can accumulate in marine mammal stomachs leading to biased results. It has been proposed that analyzing the most recent components of stomach contents would produce a picture closer to the real diet. Hence, the aim of our study was to define a digestion scale to distinguish fresh parts from the digested fraction. We took prey of different lengths from seventeen species and immersed them in a 1/100 pepsin solution at 37°C and pH2, for 12h. Every hour, their digestive states were recorded. The fresh/accumulated limit, defined as “the time at which the first prey becomes undeterminable”, was then identified for each species. Afterwards, the method was applied to dietary data from common dolphins (N=92) and was tested by comparing the reconstituted diets from fresh versus total and accumulated fractions. Relative abundance, reconstructed biomass, and prey length distributions significantly differed between the different fractions (X^2 , $p < 0.05$). In conclusion, the method we built proved to be easy to apply and useful for both modeling and comparative purposes. Indeed, you may either: extract the supposedly less biased fresh fraction in order to integrate it into a model, extract the accumulated fraction in order to compare your results with studies performed on more digested material (e.g.: results from by-catch versus stranded animals), or take into account the whole material in order to compare it with most previous works which generally did not discriminate fresh from digested prey remains.